CLAIM AMENDMENTS

Claim 1 (Currently Amended) A method of hierarchical scheduling comprising:

receiving, by a network processor, data from one or more pipes, each pipe including a plurality of pipe flows;

writing, by the network processor, data regarding the one or more pipes to one or more calendars;

selecting, by the network processor, a winning pipe from the one or more pipes from which to transmit data based upon one or more quality of service parameters corresponding to the winning pipe;

selecting, by the network processor, a winning pipe flow from the plurality of pipe flows included in the winning pipe based upon one or more quality of service parameters corresponding to the winning pipe flow; and

transmitting, by the network processor, data from the winning pipe flow using a bandwidth corresponding to the winning pipe flow.

Claim 2 (Canceled)

Claim 3 (Original) The method of claim 1 wherein selecting a winning pipe from the one or more pipes from which to transmit data based upon one or more quality of service parameters corresponding to the winning pipe includes writing data identifying a pipe to a memory address in a group of memory addresses based upon one or more quality of service parameters corresponding to the pipe and scanning the group of memory addresses to find data identifying a pipe.

Claim 4 (Original) The method of claim 3 further comprising rewriting data identifying the winning pipe to a memory address in a group of memory addresses based upon one or more quality of service parameters corresponding to the winning pipe.

Claim 5 (Previously Presented) The method of claim 1 wherein selecting a winning pipe flow from the plurality of pipe flows included in the winning pipe, based upon one or more quality of service parameters corresponding to the winning pipe flow, includes:

writing data identifying a pipe flow to a memory address in a group of memory addresses based upon one or more quality of service parameters corresponding to the pipe flow;

scanning the group of memory addresses to find data identifying a pipe flow;

writing the identified pipe flow in a queue corresponding to the winning pipe based upon one or more quality of service parameters corresponding to the winning pipe flow; and

selecting the identified pipe flow from the queue corresponding to the winning pipe.

Claim 6 (Previously Presented) The method of claim 5 further comprising writing data identifying the winning pipe flow to a memory address in a group of memory addresses, based upon one or more quality of service parameters corresponding to the winning pipe flow.

Claim 7 (Previously Presented) A method for hierarchical scheduling comprising:

receiving, by a network processor, data identifying a pipe flow, the pipe flow included in a pipe;

writing, by the network processor, data regarding the pipe to a first calendar;

writing, by the network processor, data regarding the pipe flow to a second calendar;

scanning, by the network processor, the first calendar for a winning pipe;

scanning, by the network processor, the second calendar for a winning pipe flow;

writing, by the network processor, the winning pipe flow to a corresponding pipe queue;

using, by the network processor, the winning pipe to select a pipe flow from a corresponding pipe queue; and

transmitting, by the network processor, data from the selected pipe flow.

Claim 8 (Original) The method of claim 7 further comprising rewriting data regarding the winning pipe flow to the second calendar.

Claim 9 (Original) The method of claim 7 further comprising rewriting data regarding the winning pipe to the first calendar.

Claim 10 (Previously Presented) A network processor comprising:

at least one memory adapted to store one or more quality of service parameters corresponding to one or more pipes and pipe flows; and

scheduler logic, coupled to the at least one memory, adapted to:

receive data from one or more pipes, each pipe including a plurality of pipe flows;

select a winning pipe from the one or more pipes from which to transmit data based upon one or more quality of service parameters corresponding to the winning pipe;

select a pipe flow from the plurality of pipe flows included in the winning pipe based upon one or more quality of service parameters corresponding to the selected pipe flow; and

transmit data from the selected pipe flow;

wherein the scheduler logic comprises:

a primary calendar for storing at least one of an autonomous flows and a pipe that are scheduled to be serviced;

a secondary calendar for storing pipe flows that are scheduled to be serviced; and

a pipe queue table for storing a winning pipe flow in a queue for a pipe to which the pipe flow corresponds.

Claim 11 (Canceled)

Claim 12 (Previously Presented) The network processor of claim 10 wherein the scheduler logic further comprises:

enqueue and new attach logic for scheduling at least one of an autonomous flow and a pipe flow to be serviced; and

dequeue and reattach logic for selecting at least one of an autonomous flow and a pipe flow to be serviced.

Claim 13 (Original) The network processor of claim 10 wherein the scheduler logic is further adapted to transmit data from the selected pipe flow using a bandwidth corresponding to the winning pipe flow.

Claim 14 (Original) The network processor of claim 10 wherein the scheduler logic is further adapted to write data identifying

a pipe to a memory address in a group of memory addresses based upon one or more quality of service parameters corresponding to the pipe and scanning the group of memory addresses to find data identifying a pipe.

Claim 15 (Original) The network processor of claim 14 wherein the scheduler logic is further adapted to rewrite data identifying the winning pipe to a memory address in a group of memory addresses based upon one or more quality of service parameters corresponding to the winning pipe.

Claim 16 (Original) The network processor of claim 10 wherein the scheduler logic is further adapted to:

write data identifying a pipe flow to a memory address in a group of memory addresses based upon one or more quality of service parameters corresponding to the pipe flow;

scan the group of memory addresses to find data identifying a pipe flow;

write the identified pipe flow in a queue corresponding to the winning pipe based upon one or more quality of service parameters corresponding to the selected pipe flow; and

select the identified pipe flow from the queue corresponding to the winning pipe.

Claim 17 (Original) The network processor of claim 16 wherein the scheduler logic is further adapted to write data identifying the selected pipe flow to a memory address in a group of memory addresses, based upon one or more quality of service parameters corresponding to the selected pipe flow.

Claim 18 (Original) A network processor comprising:

at least one memory adapted to store one or more quality of service parameters corresponding to one or more pipes and pipe flows; and

scheduler logic comprising a first calendar and a second calendar, coupled to the at least one memory and adapted to:

receive data identifying a pipe flow, the pipe flow included in a pipe;

write data regarding the pipe to the first calendar;

write data regarding the pipe flow to the second calendar;

scan the first calendar for a winning pipe;

scan the second calendar for a winning pipe flow;

write the winning pipe flow to a corresponding pipe queue;

use the winning pipe to select a pipe flow from a corresponding pipe queue; and

transmit data from the selected pipe flow.

Claim 19 (Original) The network processor of claim 18 wherein the scheduler logic further comprises: a pipe queue table for storing a winning pipe flow in a queue for a pipe to which the pipe flow corresponds;

an enqueue and new attach logic for scheduling at least one of an autonomous flow and a pipe flows to be serviced; and

a dequeue and reattach logic for selecting at least one of an autonomous flow and a pipe flow to be serviced.

Claim 20 (Original) The network processor of claim 18 wherein the scheduler logic is further adapted to rewrite data regarding the winning pipe flow to the second calendar.

Claim 21 (Original) The network processor of claim 18 wherein the scheduler logic is further adapted to rewrite data regarding the winning pipe to the first calendar.

R E M A R K S

- Claims 1, 3-10 and 12-21 are pending
- Claim 1 has been amended herein
- Claims 1, 7, 10 and 18 will remain the only independent claims pending upon entry of this amendment

SUMMARY OF EXAMINER INTERVIEW

An Examiner Interview was conducted between Examiner Henry Baron and Applicants' Representative, Steven M. Santisi, Registration Number 40,157, on December 8, 2011 to discuss the present application. Specifically, Applicants proposed amending claim 1 to include the allowable features of claim 7 to overcome the present Section 102 rejection of claim 1. The Examiner indicated that the writing of the data regarding the pipe and pipe flow into the calendars was the feature that distinguished claim 7 over the references. Applicant proposed adding this feature to pending claim 1 and the Examiner indicated that such an amendment appeared to overcome the rejection and make the claim allowable but that further searching and consideration would be required. No agreement as to patentability was reached. No other issues, references, or claims were discussed.

REJECTION OF CLAIM 1 UNDER 35 U.S.C. § 102(b)

Claim 1 stands rejected under 35 U.S.C. § 102(b) as being allegedly anticipated by U.S. Patent No. 6,272,109, filed November 18, 1997 and issued August 7, 2001 by *Tong-Bi Pei et*

al. (hereinafter "*Pei*"). Applicants respectfully traverse this rejection.

Applicants' claim 1 recites receiving data from one or more pipes, selecting a winning pipe based upon one or more quality of service parameters, selecting a winning pipe flow based on quality of service parameters, and transmitting data from the winning pipe flow. The Examiner's rejection does not appear to address these particular features. Instead, the Examiner's rejection describes a sequence of steps that include selecting a first winning entry indicating a first winning pipe to be serviced, determining that no pipe flow corresponding to the winning first pipe currently needs to be serviced, selecting a second winning entry indicating a second pipe to be serviced, and servicing the pipe flow corresponding to the second winning entry. This sequence of steps is simply not recited in claim 1. Applicants respectfully request clarification. Absent a rejection of Applicants' recited features, Applicants respectfully request withdrawal of the Section 102 rejection.

Regardless of the above, and solely to expedite prosecution, Applicants have herein amended claim 1 to recite features that the Examiner has indicated make claim 1 allowable over *Pei*. Specifically, as agreed in the Examiner Interview of December 8, 2011, claim 1 has been amended to recite that the network processor writes data regarding the one or more pipes to one or more calendars. Therefore, in light of this amendment, Applicants respectfully request withdrawal of the Section 102 rejection for this additional reason.

REJECTION OF CLAIMS 3-6 UNDER 35 U.S.C. § 103(a)

Claims 3-6 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over *Pei* in view of U.S. Publication No. 2004/0081167, filed October 25, 2002 and published April 29, 2004 by *Mudhafar Hassan-Ali et al.* (hereinafter "*Hassan-Ali*") in view of U.S. Patent No. 7,020,161, filed November 16, 2000 and issued March 28, 2006 by *Hans Eberle et al.* (hereinafter "*Eberle*"). Applicants respectfully traverse these rejections. Applicants assert that the additional references do not cure the deficiencies of Pei as described above. Further, the independent claim from which claims 3 to 6 depend has been amended to distinguish over the references as described above. Therefore, in light of the amendment and arguments made with respect to the Section 102 rejection, Applicants respectfully request withdrawal of the Section 103 rejections.

Allowable Claims

Applicants appreciate the Examiner's indication that claims 7-10 and 12-21 are allowable.

Conclusion

In light of the Applicants' arguments and amendments, reconsideration and withdrawal of the rejections are respectfully requested.

Applicants believe that all the pending claims are allowable, and that the application is in condition for allowance. Applicants respectfully request reconsideration and allowance of the same.

Applicants do not believe that any additional fees are due regarding this Amendment. However, if any additional fees are required, please charge Deposit Account No. 04-1696.

Respectfully Submitted,

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Hawthorne, New York